

DOUBLE EMPYEMA FOLLOWED BY  
RECOVERY.

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DOUBLE empyema is so rare that I think the following case may be of interest. The patient was a girl, eleven years of age, who was admitted to the Royal United Hospital on Sept. 14th, 1896, her illness having commenced on the 11th with pain in the abdomen and vomiting. On admission she looked acutely ill and had a flushed face, marked dyspnoea with orthopnoea, and a rather tuberculous aspect. Her temperature was 102.6° F., the respiration was 40 and shallow, and the pulse was 114. There were signs of pneumonic consolidation together with friction at the right base. Three days after this friction and signs of consolidation were present at the left base also. The respirations rose to 66 per minute, the pulse to 160, and the temperature to 105°. There were considerable distress and continued crying out from the pleuritic pain. On Sept. 24th signs of fluid at both bases were present, the heart's apex being in the fifth space immediately outside the nipple line. On the 30th the left side of the chest was explored with a syringe and pus was withdrawn. On the next day an incision was made in the ninth space and a soft indiarubber tube was inserted, whereupon much flaky, sweet pus escaped. On the following day the pleura was washed out with 1 in 80 carbolic solution. On Oct. 6th, pus having been discovered on the right side by means of a small exploring syringe, an incision was made in the ninth space and an indiarubber tube was inserted. From this side also a large quantity of "laudable" pus escaped and the side was washed out next day. I regret to say that the pus was not examined microscopically. At both operations the A.C.E. mixture was administered and no unfavourable symptoms occurred. Both sides were washed out daily with iodine water until Oct. 30th, when the tube on the right side was removed and that on the left side on Nov. 9th. On Nov. 25th the girl was up and about; she was putting on flesh rapidly, both wounds having healed up. The temperature was normal and there was no deformity of the thorax, but at both bases there was a want of resonance, together with distant breath sounds which were probably due to thickened pleuræ. The heart's apex came back to its normal position.

From Sept. 14th to 20th inclusive the patient's temperature varied between 100.4° and 103.8°, with the exception that on the evening of the 17th it was 105°. From the 21st to the 28th inclusive it varied between 98° and 101°, with the exception that on the evening of the 25th it rose to 102° and on the evenings of the 27th and 28th to 101.6°. From the 29th to Oct. 13th inclusive it varied between 98° and 102.4°, with the exception that on Oct. 7th it was 97.4° at midday and 103.4° in the evening. On the 14th it varied from 97.6° to 100.6°. From the 15th to the 21st inclusive it varied from 97° to 100°, with the exception that on the 17th it was 100.2° and on the 19th 101.2°. From the 22nd to the 25th inclusive it varied from 97.4° to 99.6°. From the 26th to Nov. 15th it varied from 97° to 99.4°.

It will be admitted, I think, that double empyema is extremely rare—in fact, this is the first case which I have seen during twelve years' connexion with hospitals. Walshe, in his "Practical Treatise on Diseases of the Lungs," writes: "Cases of double empyema are, as a general rule, unfit for operation unless evacuation be rendered necessary for the prevention of asphyxia." Treves, in his "System of Surgery," vol. ii., p. 441, writes: "Double empyema is a very grave condition and, happily, not common. The two sides should not be opened at the same operation, but an interval of a few days or a week should elapse between the two operations." He concludes thus: "It is a striking and apparently a paradoxical fact that an operation (opening both pleuræ) which, if performed on the healthy, would be invariably fatal in its effects is a valuable means of saving life when employed in conditions of disease." That this child should have recovered in the way in which she did was a great surprise to me, for her condition on more than one occasion was extremely critical.

Bath.

A CASE OF ACCIDENTAL OVERDOSE OF  
CHLOROFORM.

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THE events now described took place between 8 and 9 A.M. on June 9th, 1898, at the Afzulgunj Hospital. The patient was a male native, thirty-six years of age, upon whom an operation was to be performed for cario-necrosis of the lower jaw. He had not had any food since 6.30 A.M. Immediately before the operation his pulse was found to be 128 per minute and weak; his respirations were 28. The chloroformist was Mr. Hamid-ud-Din, a third-year student of the Hyderabad Medical School. The notes were taken by Lieutenant-Colonel Lawrie until anæsthesia was complete.

Administration commenced in one-drachm doses on a cap as follows (the figures give the hour with the minutes and seconds):—

H.	M.	S.	
8	23	15	Cap applied, natural breathing, patient told to blow into the cap if he had a feeling of being choked.
8	24	0	Chloroform added to the cap; one breath of air taken.
8	24	55	Patient struggling, but breathing regularly.
8	25	0	Chloroform added to the cap; one breath of air taken.
8	25	50	Patient spitting.
8	26	0	Chloroform added to the cap; one breath of air taken. Patient struggling very violently but breathing regularly and deeply.
8	26	45	The patient was struggling so violently and taking such deep inspirations that although they were regular the chloroformist was told to remove the cap and give nothing but air. The patient took three full breaths of pure air and the cap was then reapplied.
8	27	10	Chloroform added to the cap. Two breaths of air taken. The patient became quiet and began snoring before the cap was reapplied.
8	27	25	Cornea insensitive; the cap removed. (It was never put near the face again. The notes were now taken by the assistant house surgeon.)
8	28	0	The patient's breathing stopped suddenly; his eyes were staring, his pupils were widely dilated, and his skin was pallid. The surgeon sprang on to the table and, kneeling astraddle the patient, commenced artificial respiration. The chloroformist pushed forward the patient's lower jaw and opened his mouth, and the house surgeon pulled out his tongue. There was great delay and difficulty in doing this as the teeth of the right half of the lower jaw were all loose, and there was a piece of loose dead bone. Another assistant poured some nitrite of amyl on to a handkerchief and held it over the patient's face, while the artificial respiration was going on, in such a way that it was freely inhaled.
8	30	40	Natural breathing restored. Artificial respiration stopped.
8	32	30	Consciousness returning.
8	35	15	Operation finished. Patient walked out of the room.

In this case the overdose was taken in during the struggling stage, which was due to intoxication, the breathing being quite regular. Overdosing with regular breathing, even if it be abnormally deep, is the rarest form of chloroform accident which is met with clinically, and it is more than ordinarily dangerous because the regularity of the respiration puts the chloroformist off his guard. The fault in the administration consisted in not at once giving the patient more air when the struggling became violent and the breathing abnormally deep. At 26 minutes 45 seconds past 8 o'clock when the chloroformist was told to give the patient air alone—because it was evident that he was inhaling the chloroform too freely—the cap should not have been reapplied until the breathing became normal and it was known

whether the anæsthesia was becoming deeper or not. The mechanism of the action of an overdose in a case like this is explained on page 17 of the Hyderabad Commission's report: "(2) If the inhalation (of chloroform) is interrupted at any stage the fall of blood-pressure continues at a rate which altogether depends on the rapidity of the fall while the chloroform was being inhaled. This afterfall is probably due to absorption of a portion of the residue of chloroform in the air passages after the stoppage of the inhalation. In this way it often happens, if chloroform is given rather freely (more especially if there has been struggling and deep inspirations), that though the respiration is going on when the chloroform is discontinued it afterwards stops."<sup>1</sup> The restoration of the patient was effected by artificial respiration and the artificial inhalation of nitrite of amyl, and the rapid recovery after natural breathing had recommenced was probably due to the beneficial action of this drug.

Hyderabad.

## A SIMPLE AND EFFECTUAL METHOD OF STERILISING CATGUT.

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A GROWING sense of the superiority of readily absorbable material such as catgut for ligatures and buried sutures, if only one could be sure of its absolute asepticity, and the acknowledged uncertainty of the commercial preparations, led me to make some experiments on the effect of heating catgut in substances other than water with the view of determining whether after heating for some time to a temperature of 100° C. it would still be sufficiently strong to be employed as a suture or ligature. At first, I used methylated spirit which was heated in a cylinder made for me by Messrs. Down Brothers and specially prepared to withstand the pressure under which spirit would be when subjected to the temperature of boiling water. The results obtained were satisfactory, the catgut after being heated in alcohol for twenty minutes being quite as strong as before heating. This substance was given up only because it was considered inadvisable to run the risk of an explosion if some fluid equally suitable in other respects could be obtained which had a boiling-point higher than water. Three substances were selected: aniline, the boiling-point of which is 184.5° C.; xylol (di-methyl-benzene), which boils at about 140° C.; and glycerine, the boiling-point of which is above 100° C. and which at ordinary atmospheric pressure decomposes before it reaches its boiling-point. Trials with each of these three substances left the catgut strong, but on the whole xylol has been found to give the best results, and, indeed, when it is used the result is better than with methylated spirit, the catgut shrinking, gaining in strength, and "biting" better when tied. For some time I have used catgut, usually the "00" size, prepared in this way and have had every reason to be satisfied with it. At the outset the ordinary dry chromic carbolie catgut was used, but recently I have employed ordinary unmedicated catgut with equal satisfaction.

The exact method adopted is the following. The catgut is wound *loosely* from end to end round an elongated glass reel made for me by Messrs. Reynolds and Branson of Leeds. Several of these glass reels are then introduced into a metal cylinder, the cap of which screws on, and after more xylol than is sufficient to cover them has been poured in the cap is adjusted. The whole is then put into the boiling water in the steriliser and allowed to remain along with the instruments for from 20 minutes to half an hour. After being thus sterilised the reels with the catgut which has shrunk round them are removed *at once* and kept either in 5 per cent. carbolie acid solution or in methylated spirit, the latter being preferable, as any aqueous solution tends to cause cutgut to swell. In this solution they may be kept on the reels till required. I have kept them as long as five weeks without any diminution in the strength of the gut, but I ordinarily prepare the catgut at the same time and along with the other instruments before each operation. After

each heating the cylinder should be dried and the used xylol rejected, as a certain amount of decomposition takes place and catgut will soften if heated in it a second time. Care should be taken that no water is allowed to mix with the xylol, or of course the catgut will gelatinise.

The great advantage of this method of sterilising catgut lies in its simplicity and the ease with which it can be carried out, while, judging from clinical results, especially those in which unmedicated gut was used, the sterilisation seems to be absolutely complete. I have to thank my friend, Dr. Farquhar Macrae, for his kind assistance in carrying out the numerous experiments which had to be performed before arriving at the perfected method which I feel that I can fully recommend to other operators.

Leeds.

## VAN ERMENGEM'S METHOD OF STAINING FLAGELLA: A MODIFICATION.

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VAN ERMENGEM's solutions consist of: 1. Osmic acid, 2 per cent. solution, 1 part; tannin, from 10 to 25 per cent. solution, 2 parts; to each 100 c.c. add from 4 to 5 drops of glacial acetic acid. 2. Gallic acid, 5 grammes; tannin, 3 grammes; fused acetate of soda, 10 grammes; distilled water, 350 c.c. 3. Nitrate of silver, from 0.25 to 0.57 per cent. solution.

The method of using these solutions can be found in most elementary text-books of bacteriology. With care precipitates can be avoided and clear, well-stained flagella shown. But at other times, and especially in class work, thick deposits of silver result and very few, if any, flagella are shown. To careful workers, also, with this method failures are by no means unknown. The modification which, in my hands, has given beautiful results consists in using instead of nitrate of silver one of the many compounds of silver and albumin now on the market. I was led to try one of these compounds as it is stated of them that they are not precipitated by chlorides or albumin. The particular compound used by myself is "largin," which contains over 10 per cent. of silver. This body smells of ammonia and when dissolved in distilled water forms a clear brown solution. Chlorides give a mere trace of precipitate. I follow exactly the usual procedure, using as my silver bath a 2 per cent. largin solution, which will contain about 0.2 per cent. of silver. The actual times in each particular solution after the mordant are of little importance and the film may be passed back and fore from silver to gallic acid three or four times or oftener. If this method be tried it will be noticed that a greyish film is formed on immersing in the gallic solution after previous immersion in the silver solution. On replacing in the silver solution this film is dissolved up and the cover-glass is left perfectly clear, the silver solution taking on a deep mahogany colour, but no precipitate forms in the silver bath. The film has thus passed through (1) largin (from 2 to 10 minutes), (2) gallic acid (from 2 to 10 minutes), (3) largin (till clear), (4) gallic acid again if necessary, and so on back and fore. These details may be varied at will—e.g., the film may be rapidly washed in water between each bath (or the film may even be blotted); it is well to drain off excess of silver before putting in the gallic acid bath, but these are points which each observer can easily find out for himself, the "condition" of the cover-slip being the important matter.

In preparing the cover-glasses they should always be burnt on a piece of wire gauze to remove all fat. The ease and certainty with which well-stained, clean preparations can be obtained by this method have induced me to publish this brief note in order that others with time at their disposal may find out by trial the best strength of "largin" solution to use and whether "protargon" or other similar bodies could equally well be used. I have stained so far in this way the typhoid bacillus, Gärtner's bacillus, bacillus fluorescens, vibrios, and micrococcus agilis (the latter showing extremely long flagella with large open curves). It is quite possible that an ammoniacal solution of silver nitrate would give the same result, but this I have not actually tried.

Cambridge.

<sup>1</sup> It must be remembered that in all the experiments of the Hyderabad Commission chloroform was administered very freely in order to test the effects of overdoses.